Conclusion

Laser facilities around the world have a broad range of capabilities

*** Nova (LLNL - 1984-1999): 10 beams, 40 kJ/30 TW, 0.35, 0.53 μm; primarily indirect drive**

***- PetaWatt (1996): 1 PW, 1 ps, 1.05 μm, I ~ 10^{21} W/cm^2**

- Falcon (1 beam, 200 mJ, 40 fs)

- Janus (1980): 2 beams, 1.05, 0.53μm, 100J/beam 1ω, 100ps-1ns Gaussian

***Phebus (CEA-Limeil, France): 2 beams, 6 kJ, 0.35, 0.53 μm; primarily indirect drive**

Helen (AWE, UK): 2 beams, 500J/beam, 0.53 μm; primarily indirect drive

Omega (Univ. Rochester - 1995) - 60 beams, 40 kJ/50 TW, 0.35 μm, direct- or indirect-drive

Trident (LANL - 1992) - 2 beams, 100 J/beam, 1.05, 0.53 μm + a backlighter beam

Nike (NRL - 1995) - 2 kJ/0.4 TW, 0.26 μm + a backligher beam, direct-drive

Gekko-13 (Osaka Univ., Japan): 12 beams (200 J/beam) + 1 petawatt beam soon

Vulcan (RAL, UK): 8 beams + 1 petawatt beam soon, primarily direct-drive

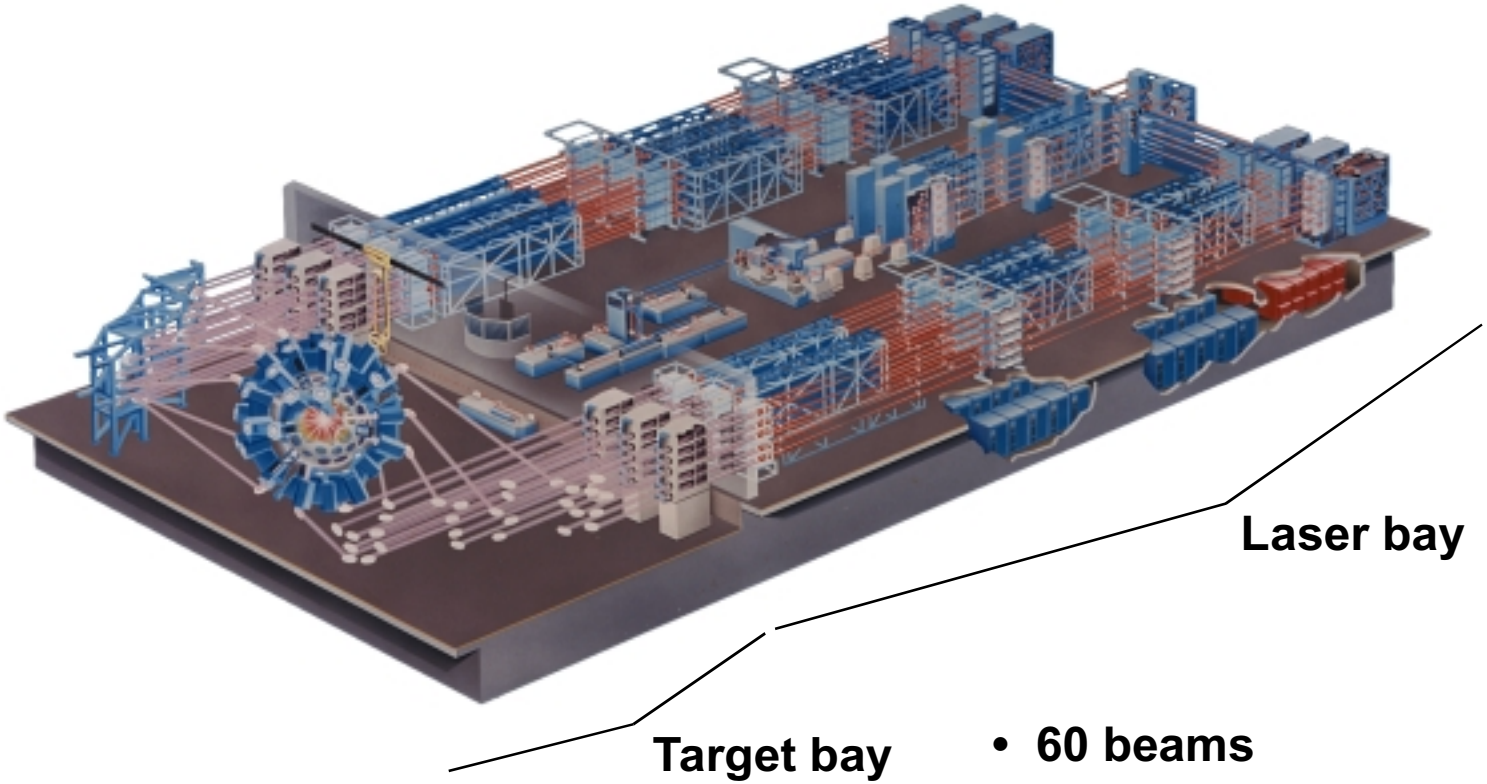
LULI (Ecole Polytechnique, France): 6 beams (1/2 kJ total at 1μm) + 1 petawatt beam soon

#NIF (LLNL):1.8 MJ, 192 beams, indirect-drive

#LIL/LMJ (Bordeau, France): 2.2 MJ, 240 beams, indirect-drive

*** = closed; # = under construction**

Omega is a flexible, 60-beam laser facility at the University of Rochester



- 60 beams
- >30 kJ UV on target
- 1%–2% irradiation nonuniformity
- Flexible pulse shaping
- Short shot cycle (1 h)

Construction of the National Ignition Facility (NIF) at LLNL as of 1997

Sept. 30, 1997

The NIF construction site on October 1999

NIF as of Oct. 1999

A wide variety of lasers currently exist

More are being built

Relevant astrophysics experiments seem very promising

To learn / hear more, ...